

# Seafood

## EXPORT JOURNAL





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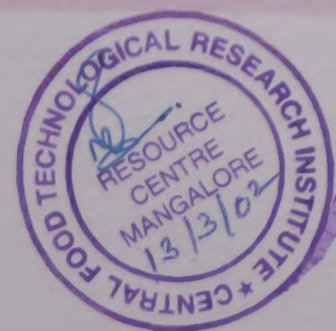
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# Food Hygiene



a HACCP-based approach wherever possible to enhance food safety as described in Hazard Analysis and Critical Control (HACCP) System and Guidelines for its Application (Annex).

The controls described in this General Principles document are internationally recognized as essential to ensure the safety and suitability of food for consumption. The General Principles are commended to Governments, industry (including individual primary producers, manufacturers, processors, food service operators and retailers) and consumers alike.

## Section I- Objectives

### The Codex General Principles of Food Hygiene:

- identify the essential principles of food hygiene applicable throughout the food chain (including primary production through to the final consumer), to achieve the goal of ensuring that food is safe and suitable for human consumption;
- recommend a HACCP- based approach as a means to enhance food safety;
- indicate how to implement those principles; and
- provide a guidance for specific

# Basic Texts

codes which may be needed for sectors of the food chain; processes; or commodities; to amplify the hygiene requirements specific to those areas.

## Section II- Scope, Use And Definition

### 2.1 Scope

#### 2.1.1 The Food chain

This document follows the food chain primary production to the final consumer setting out the necessary hygiene conditions for producing food which is safe and suitable for consumption. The document provides a baseline structure for other more specific codes and guidelines should be read in conjunction with this document and Hazard Analysis and Critical Control (HACCP) System and Guidelines for its Application (Annex).

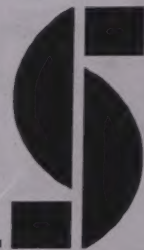
#### 2.1.2 Roles of Governments, Industry, and Consumers

Governments can consider the contents of this document and decide how best they should encourage these general principles to;

- protect consumers adequately from illness or injury caused by food. Policies need to consider the vulnerability of the population, or of different groups within the population;
- provide assurance that food is suitable for human consumption;
- maintain confidence in internationally traded food; and
- provide health education programmes which effectively communicate the principles of food hygiene to industry and consumers.



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Industry should apply the hygienic practices set out in this document to:

- provide food which is safe and suitable for consumption;
- ensure that consumers have clear and easily-understood information, by way of labelling and other appropriate means, to enable them to protect their food from contamination and growth/ survival of foodborne pathogens by storing, handling and preparing it correctly; and
- maintain confidence in internationally traded food.

Consumers should recognize their role by following relevant instructions and applying appropriate food hygiene measures.

## 2.2 Use

Each section in this document states both the objectives to be achieved and the rationale behind those objectives in terms of the safety and suitability of food.

Section III covers primary production and associated procedures. Although hygiene practices may differ considerably for the various food commodities and specific codes should be applied where appropriate, some general guidance is given in this section. Section IV to X set down the general hygiene principles which apply throughout the food chain to the point of sale. Section IX also covers consumer information, recognizing the important role played by consumers in maintaining the safety and suitability of food.

There will inevitably be situations where some of the specific requirements contained in this document are not applicable. The fundamental question in every case is "what is necessary and appropriate on the grounds of the safety and suitability of food for con-



sumption?"

The text indicates where such questions are likely to arise by using the phrases "where necessary" and "where appropriate". In practice, this means that, although the requirement is generally appropriate and reasonable, there will nevertheless be some situations where it is neither necessary nor appropriate on the grounds of food safety and suitability. In deciding whether a requirement is necessary or appropriate, an assessment of the risk should be made, preferably within the framework of the HACCP approach. This approach allows the requirements in this document to be flexibly and sensibly applied with a proper regard for the overall objectives of producing food which is safe and suitable for consumption. In so doing it takes into account the wide diversity of activities and varying degrees of risk involved in producing food. Additional guidance is available in specific food codes.

## 2.3. Definitions

For the purpose of this Code the following expressions have the meaning stated:

**Cleaning** – the renewal of soil, food residue, dirt, grease or other objectionable matter.

**Contaminant** – any biological or chemical agent, foreign matter, or other substances not intentionally added to food which may compromise food safety

or suitability.

**Contamination** – the introduction or occurrence of a contaminant in food or food environment.

**Disinfection** – the reduction, by means of chemical agents and/or physical methods, of the number of micro-organisms in the environment, to a level that does not compromise food safety or suitability.

**Establishment** – any building or area in which food is handled and the surroundings under the control of the same management.

**Food hygiene** – all conditions and measures necessary to ensure the safety and suitability of food at all stages of the food chain.

**Hazard** – a biological, chemical or physical agent in or condition of food with the potential to cause an adverse health effect.

**HACCP** – a system which identifies, evaluates and controls hazards which are significant for food safety.

**Food handler** – any person who directly handles packaged or unpackaged food, food equipments and utensils, or food contact surfaces and is therefore expected to comply with food hygiene requirements.

**Food safety** – assurance that food will not cause harm to the consumer when it is prepared and/or eaten according to its intended use.

**Food suitability** – assurance that food is acceptable for human consumption according to its intended use.

**Primary production** – those steps in the food chain up to and including, for example, harvesting, slaughter, milking, fishing.

## Section III Primary Production Objectives:

Primary production should be managed in a way that ensures that food is



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safe and suitable for its intended use. Where necessary, this will include:

- avoiding the use of areas where the environment poses a threat to the safety of food;
- controlling contaminants, pests and diseases of animals and plants in such a way as not to pose a threat to food safety;
- adopting practices and measures to ensure food is produced under appropriately hygienic conditions.

#### Rationale:

To reduce the likelihood of introducing a hazard which may adversely affect the safety of food, or its suitability for consumption, at later stages of the food chain.

### 3.1 Environmental Hygiene

Potential sources of contamination from the environment should be considered. In particular, primary food production should not be carried on in areas where the presence of potentially harmful substances would lead to an unacceptable level of such substances in food.

### 3.2 Hygienic production of food sources

The potential effects of primary production activities on the safety and suitability of food should be considered at all times. In particular, this includes identifying any specific points in such activities where a high probability of contamination may exist and taking specific measures to minimize that probability. The HACCP-based approach may assist in the taking of such measures.

Producers should as far as practicable implement measures to:

- control contamination from air, soil, water, feedstuffs, fertilizers (including natural fertilizers), pesticides, veterinary drugs or any other agent used in primary production.
- control plant and animal health so that it does not pose a threat to human health through food consumption or adversely affect the

suitability of the product; and

- protect food sources from faecal and other contamination.

In particular, care should be taken to manage wastes, and store harmful substances appropriately. On-farm programmes which achieve specific food safety goals are becoming an important part of primary production and should be encouraged.

### 3.3 Handling, storage and transport

Procedures should be in place to:

- sort food and food ingredients to segregate material which is evidently unfit for human consumption;
- dispose of any rejected material in a hygienic manner, and
- protect food and food ingredients

from contamination by pests or by chemical, physical or microbiological contaminants or other objectionable substances during handling, storage and transport.

Care should be taken to prevent, so far as reasonably practicable, deterioration and spoilage through appropriate measures which may include controlling temperature, humidity and/or other controls.

### 3.4 Cleaning, maintenance and personnel hygiene at primary production

Appropriate facilities and procedures should be in place to ensure that:

- any necessary cleaning and maintenance is carried out effectively; and
- an appropriate degree of personal hygiene is maintained.

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Pacific seafood Group	Portland, Ore	550
Fishery Products Int'l Ltd	St. John's, Newfoundland	510
Ocean Beauty	Seattle	420
American Seafoods Co	Seattle	350
Gorton's Seafood	Gloucester, Mass	350
Tri- Marine Int'l Inc	San Pedro, California	334
Aqua Star	Seattle	20
Slade Gorton & Co	Boston, Mass	300
The Mazzetta Co	Highland Park, Ill	285
George Western Ltd Fisheries	Toronto	252
Empress International Ltd	Port Washington, N.Y.	260
Contessa Food Products	San Pedro, California	250
Icicle Seafoods Inc	Seattle	225
Auroara Foods	St. Louis, Mo	200
Central Seaway Co	Northfield Ill.	193
High Liner Foods	Lunenburg, Nova Scotia	180



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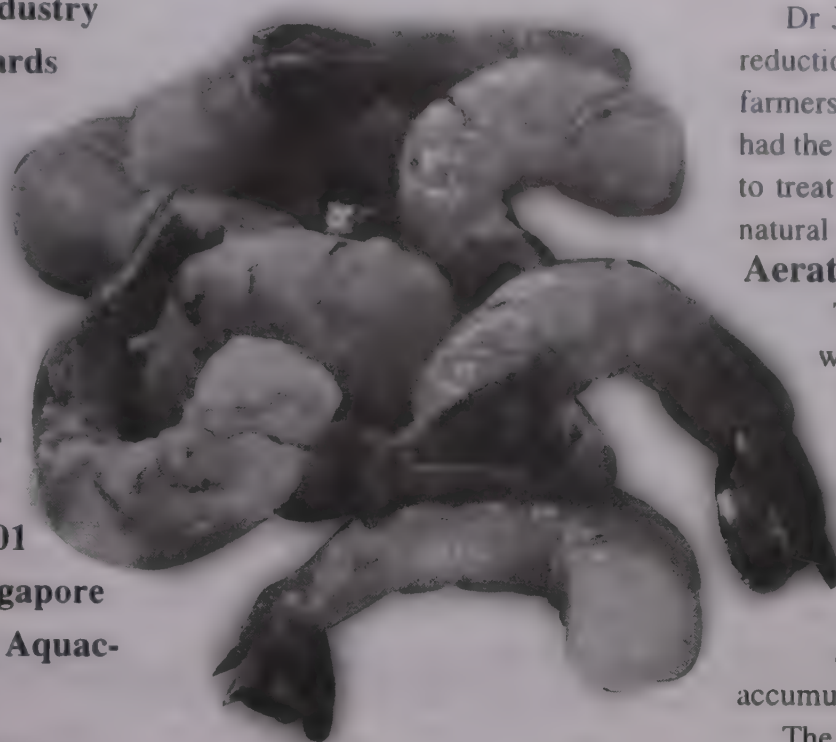
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# Asian shrimp industry moves to new technologies



The shrimp farming industry in Asia is moving towards new production technologies in a bid to increase productivity, ensure consumer acceptance and minimise negative environmental impacts. This was said at the Global Shrimp OF: 2001 conference held in Singapore recently by the Global Aquaculture Alliance (GAA).

Discussed at the conference were the interim results of GAA's ongoing international survey in 18 topics covering the overall facet of shrimp production in Asia.

Presenting the survey results under the "New Production Technology" topic, Dr Yoram Avnimelech of the Israel Institute of Technology stated that the driving forces behind the change were the need to increase productivity and efficiency, overcome diseases, and maintain the consumption in the midst of price volatility. To achieve this, he said the new technologies and farming practices are increasingly being adopted by the farmers in Asia and worldwide.

## Low & zero water exchange

According to Dr Avnimelech, the traditional shrimp culture was problematic in itself. A high level of water exchange commonly practiced in the past posed adverse effects to the environment, and at the same time was unhealthy and potentially induced disease carriers into the pond.

The solution, he said, was to farm shrimp in the closed system with low or zero exchange, which is also the best way to reduce pollution associated with shrimp farming.

The survey results showed that the farmers in Asia and the Western Hemisphere alike were reducing water exchange from 10-20% per day in 1998 to less than 5': today and more were adopting the zero exchange system.

This trend is confirmed by the other survey under the Effluent Water Quality topic, reported at the conference by Dr. Christopher Jackson of CSIRO Marine Research in Australia.

Dr Jackson said in addition to the reduction of water exchange, half of the farmers responding to his survey had the settling basins in place in order to treat effluent before discharge into natural water sources.

## Aeration to reduce sludge

The adoption of low and zero water exchanges systems brought about the need to manage the pond environment effectively. And that came to a new concept of aerating and positioning of aerators in order to avoid unaerated areas and resuspend the sludge accumulated on the pond bottom.

The new aeration concept was increasingly being adopted by the farmers in Asia and worldwide as shown in the other survey result done by Dr. Yont Musig of Kasetsart University in Thailand.

In a presentation of his survey on the Aerated Pond Management topic, Dr. Yont said that the farmers not only aerated the pond in order to maintain the level of oxygen in water but also resuspend organic matters and create heterotrophic conditions.

## Water screening and disinfection

As disease is of great concern by the farmers, Dr. Avnimelech pointed out that water screening and disinfection has become a standard practice in Asia and the west.

More than half of the farmers responding to his survey indicated that they used liner and liner nets to filter incoming water. Asia, in particular, used the net as fine as 150 micron (0.15 mm). Meanwhile, chlorination is a common method in water disinfection in both regions.



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## Transition from algae to bacteria

The bearish trend of shrimp price has been the motive behind efforts in increasing productivity of shrimp production of shrimp production in Asia and worldwide, according to Dr. Avnimelech.

The feed cost in Asia is relatively higher than the other regions as its main farming species is black tiger shrimp, which requires a high inclusion of protein in the diet.

Dr. Avnimelech's survey revealed that the average protein level of the shrimp feed in Asia is stable at 38% since 1998 to this day, whereas in the Western Hemisphere it lowers down from 29% to 25.5% today.

Switching from algal to microbial control in the pond would be an opportunity to reduce protein in the shrimp feed as the bacteria can increase natural feed in the system in recycling protein to be used by the shrimp. Thus, the feed cost could be lower as there is no need to use high protein diets.

The surveys result showed that the farmers in Asia has begun using carbohydrate (molasses or cassava) to recycle protein and the microbial control would play a greater role in the future particularly in the closed system farming.

Besides the ability to recycle protein, he said, bacteria do not produce energy, can digest organic residue, and are stable and not affected by light.

## Pond lining, artificial substrate, settling basin

According to Dr. Avnimelech, new technologies such as pond lining, artificial substrate and settling basin could help the farmers to increase productivity and efficiency substantially.

The pond lining, for instance, enables farmers to raise shrimp on any type of soil, provide clean surfaces and minimise idle time between crops.

In spite of proven quality, adoption of these technologies calls into ques-

tions of cost effectiveness and integration with the existing farming facilities.

However, he concluded that so far as the shrimp farming industry in Asia and elsewhere keep on improving productivity and seeking social accep-

tance, these new technologies would gradually be adopted within five years.

Additional data and details regarding the new technologies for shrimp farming can be obtained by writing to Dr. Avnimelech at agyoram@tx.technion.ac.il

## Media and meetings drive technological change

Specialist publications and meetings have been the most important source of information on new technologies for shrimp farmers, according to Dr. Yoram Avnimelech of the Israel Institute of Technology in Israel.

Speaking at the Shrimp OP: 2001 conference in Singapore recently, Dr. Avnimelech said that new production technologies were being sought by the farmers worldwide as they strived to increase productivity and comply with stringent environmental regulations.

In his survey 'New Technology Topic', the data gathered from participating shrimp farmers from the East and West shown that the main source of information on new technologies for them were specialist publications such as trade magazines and technical bulletins, and meetings and conferences where independent experts were invited to speak on the technologies.

Besides, Dr. Avnimelech said that the specialist publications and meetings were also the source of information that the farmers trusted.

"The farmers tend to seek information on new technologies from the specialist publications and meetings because they believe that these sources are the third party with no direct interest in the products," he said.

**Table 1. Source of information on new technologies**

Source of information	East*	West**	Total
Literature	5 (27.8%)	9 (33.3%)	14 (31.1%)
Meetings	5 (27.8%)	9 (33.3%)	14 (31.1%)
Farmers	3 (16.7%)	7 (25.9%)	10 (22.2%)
Government	1 (5.6%)	0 (0%)	1 (2.2%)
Companies	2 (11.1%)	1 (3.7%)	3 (6.7%)
Other	2 (11.1%)	1 (3.7%)	3 (6.7%)
	18 (100%)	27 (100%)	45 (100%)

\*, \*\* = Number of respondents Source: Dr Yoram Avnimelech: November 2001.

Of the total 45 respondents participating in the survey (18 from the East and 27 from West), 31.1% overall said they sought the information on new technologies from the specialist publications and meetings.

The discussion among farmers was the second most important source of information the respondents (22.2% overall).

Obviously, only 6.7% overall of the respondents sought the information from companies, which own or engaged in the products or technologies.

Worse still, none of the respondents from the West looked for the information from the government as compared to 5.6% in the East.

Dr. Avnimelech said that effective information transfer is vital in the new era of shrimp farming, as new technologies would be the most important solution to productivity and sustainability.

As a result, devoted specialist publications and meetings are somewhat the most important change agent, he concluded.





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# TUNA 2002



## KUALA LUMPUR 30 May-1 June, 2002

### The Industry

Since the last gathering at Tuna 2000 Bangkok, the global tuna industry has undergone significant changes:

- Fluctuations in skipjack tuna landings and prices have been dominating the industry for the last few years. Many fishing vessel operators have taken measures in an attempt to stabilize the market (price) especially by voluntarily cutting back fishing efforts to reduce what was believed to be an oversupply of skipjack in the market.

- Canned tuna packers, as a result of stagnant demand and weakening prices in major markets, have been trying to restructure their operations to make them more efficient e.g. through mergers and acquisitions; streamlining and relocating operations; and at the same time aggressively exploring and developing new products and new markets.

- Despite the above concerns, the global tuna industry in general has shown a strong growth, both in production and trade since the 90's. The total landings of the main tuna species namely skipjack, yellowfin, bigeye, albacore and bluefin continued to increase to reach almost 4 million mt in 1999 from 2.8 million mt in 1989, an average increase of more than 4 percent

per year. As for the year 2000 and 2001, tuna landings were predicted to drop slightly due to the lower landings in the Western and Eastern Pacific Oceans. These trends have somewhat stabilized the market price of skipjack at around US\$700 - 800 per mt, c&f Bangkok since mid 2001.

- The global tuna trade has also witnessed a steady growth for the past 10 years, with an average annual increase of 5.4 percent (import) and 6.4 percent (export) in value terms. According to the Food and Agriculture Organization (FAG), the total value of the world tuna imports and exports in 1999 were US\$ 5.5 billion and US\$4.6 billion respectively. Mixed developments, however, have been noticed in major markets for tuna in 2000 and 2001.

- Japan imported more fresh and frozen tuna in 2000, the highest level since 1992, reaching 360 000 mt, but in 2001 the imports have been predicted to be lower judging from the 7.0 percent decrease in imports during the first 10 months of the year.

- There has been a change in the preference for sashimi consumption in Japan, while in other parts of the world the consumption has been booming together with the fast expansion of Japanese sushi restaurant outlets and increasing number of supermarket

chains selling sushi and sashimi tuna.

- Tuna is also the most popular seafood among the US consumers and it remains the number one seafood being consumed, amounting to 3.6 pounds per capita in 2000. Import of canned tuna into the US market, however, dropped by 6.4 percent in 2000 compared to 1999 when it was at the highest level. In an attempt to stimulate demand for tuna, packers have developed and introduced new products in the market, e.g. tuna pouch which is gaining popularity among the consumers.

- Meanwhile, canned tuna market in Europe, especially in the EU, continues with steady growth. In 2000, the imports of canned tuna into the EU reached more than 400 000 mt, an average growth of around 9 per cent per year for the last five years. However, there has been a significant shift in the source of supply of canned tuna with more products coming from ACP countries due to the preferential tariff policy. Similarly, canned tuna consumption in other non-traditional markets, especially in Southeast Asian countries, have also been increasing steadily as a result of the rising popularity of tuna sandwich and other convenience healthy food products.

- Besides price fluctuation, erratic



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landings and stiff competition in the market place, the tuna industry and trade also has to face issues related to the environment. The "war" between the US and Mexico over dolphin safe issue has just started again, while there have been calls on importing countries to impose more stringent measures to boycott "illegally" harvested tuna from FOC fishing vessels and countries which are not members of regional tuna organizations. At the same time efforts have been taken internationally to combat IUU fishing and FOC fishing, to ensure more responsible and sustainable tuna fishing.

Seafood safety and trade barriers are still issues of concern to the industry. Tariff and nontariff barriers to trade in major markets and trade liberalization through WTO negotiations, will become major issues shadowing the industry.

Under the current global scenario, what will be the likely impact of the predicted tight supply situation looming ahead especially for skipjack tuna? What is the price range for skipjack acceptable to both fishing operators and also packers? Will the tuna pouch slowly replace canned tuna in the US? Is the growth rate in EU market for canned tuna sustainable or will it burst once the BSE and foot and mouth disease scares are over? Will the market size for tuna in emerging Asian markets outstrip that of the traditional markets and what are the products in demand? What are the new trends in the Japanese tuna market, for both sashimi and non-sashimi products? What are the trends for sashimi and non-canned tuna products in other markets? Are there strategies available for the industry to deal with new trends? What are the latest fishing and processing technologies available for

the industry? All these issues will be addressed and discussed thoroughly in TUNA 2002.

Tuna 2002, the seventh in the series of INFOFISH World Tuna Trade Conferences, will be held for the first time in Kuala Lumpur, the capital city of Malaysia, from 30 May - 1 June 2002. Strategically located in the middle of the Asian "Tuna Triangle" of Indonesia, the Philippines and Thailand, Kuala Lumpur is considered an ideal location for a global event of this nature. Apart from being an ideal tourist destination, Malaysia is also in the process of developing its tuna industry, especially focussing on resources in the adjacent Indian Ocean.

An exhibition will also be held in conjunction with Tuna 2002, to provide an opportunity for companies and organizations to exhibit and promote their tuna products and processes, tuna fishing and processing equipment and related technology, as well as their services.

Tuna 2002 is jointly organised by INFOFISH, together with Food and Agriculture Organization (FAO)-GLOBEFISH, IOTC (Indian Ocean Tuna Commission), IATTC (InterAmerican Tropical Tuna Commission), Ministry of Agriculture-Malaysia, TFPA (Thai Food Processors Association) and WTPO (World Tuna Purse Seine Organization) in collaboration with Department of Fisheries-Malaysia and Fisheries Development Authority of Malaysia (LKIM). The event is supported by Atuna.com

Since 1986, INFOFISH has held a series of Tuna Conferences, which have always attracted a large gathering of delegates from the global tuna industry. Around 450 - 500 delegates comprising major players and key decision-makers in the tuna industry from nearly

50 countries have attended each of the previous conferences

Tuna 2002 Kuala Lumpur would provide the global industry yet another opportunity to:

- obtain first hand information on the latest developments, as well as the future prospects of the global tuna industry from well-known industry experts;
- share views and discuss current problems on various aspects of the industry;
- establish new business links and renew contracts;
- promote products and services through the exhibition; witness and get a feel of the growing tuna market in the region;
- enjoy, last but not least, Malaysian hospitality in its unique mix of "truly Asian" cultures and the scenic beauty and golden beaches of Malaysia.

The three-day conference will cover topics on global overview of the tuna industry, regional industry situation, markets and marketing, as well as technology, quality and trade issues. A special half-day session will be dedicated for delegates to have business meetings, attend company presentations and visit the exhibition.

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# Overwhelming response for TUNA 2002

## Nearly 500 expected to attend the event!



There is growing interest among the global tuna industry in the upcoming TUNA 2002, to be held in Kuala Lumpur, Malaysia, for the first time. The Seventh World Tuna Trade Conference and Exhibition to be held at the prestigious JW Marriott Hotel, Kuala Lumpur on 30 May - 01 June is expected to attract an attendance of around 500. TUNA 2002 is organized by INFOFISH in collaboration with FAO-GLOBEFISH, Thai Food Processors' Association (TFPA), Indian Ocean Tuna Commission (IOTC), Inter-American Tropical Tuna Commission (IATTC), World Tuna Purse Seine Organization (WTPO) and Ministry of Agriculture Malaysia, supported by Atuna.com.

The latest in the series of INFOFISH Tuna Conferences, this forthcoming event will be addressed by renowned speakers selected from industry leaders, experts and policy makers. They will present topics of vital importance to the tuna industry and trade in four sessions. Chaninir Chalisarapong, Chairman of Tuna Packers Group, Thai Food Processors Association will be the keynote speaker and Conference Chairman. Other speakers in (Session One) include: Robin Allen, Director, Inter-American Tropical Tuna Commission - Global Tuna Resources, Production and Management; Helga Josupeit, FAO-GLOBEFISH - Review of the Global Tuna Trade; Cheng Niruttinanon, Managing Director, Thai Union Manufacturing - Review of the Global Canned Tuna Industry; Eng. Cesar Rohon Hervas, President, World Tuna Purse Seine Organization. - Tuna Supply: Voluntary Reduction of Fishing Effort and several other speakers who will

speak on Skipjack Price Fluctuation and its Implications on Canneries and Market, etc.

Session Two: Global Industry Situation and Outlook in Major Supply Sources. Speakers in this session are: Sumyaryo Sumiskum, Secretary General, Indonesian Tuna Association - Indonesian Tuna Industry: Prospects and Outlook; Tan Boon Pin, Chairman, Tropical Consolidated Corporation, Malaysia - Malaysian Tuna Industry and Francisco P Tiu-Laurel, Jr., President, Frabelle Fishing, Philippines - Tuna Industry in the Philippines. A speaker from the Thai industry will examine Thai Industry Situation and Outlook. The session will also be addressed by David Ardill, Executive Secretary, Indian Ocean Tuna Commission who will speak on Indian Ocean Tuna Resource Situation; Chris Reid, Market Adviser, Forum Fisheries Agency - Western and Central Pacific Tuna Industry and Resource Situation and Carlos Nunez, Manager, Asiservy, Ecuador - Ecuadorian and Latin American Tuna Industry; Prospects and Outlook. Speakers from Korean and Taiwanese industries will discuss the Korean and Taiwanese Industry Situations and Outlook.

Session Three: Markets and Marketing. The session on Markets and Marketing will be addressed by Nick Spryut, Commercial Director, Princes Foods UK - EU Market for Canned Tuna; Fatima Ferdouse, Chief Trade

Promotion, INFOFISH - Asian Markets for Canned Tuna; Christopher Lischewski, President and COO, Bumble Bee Seafoods, USA - US Market for Canned Tuna: Recent Trends, Issues and Prospects; Audun Lem, FAO - WTO and Liberalization of the Tuna Trade; and Henk Brus, Managing Director, Atuna.com, Netherlands - E-Trading in the Tuna Industry. Other topics to be covered in this session include Japanese Market for Tuna Sashimi and Canned Tuna; Trends and Prospects, Markets for Sashimi Tuna and Tuna Loins, New Pouched Tuna vs Canned Tuna etc.

Session Four: Technology, Products and Quality. Session Four will include ten speakers including Walter Anzer, WJ Anzer Consultancy, UK - Update on EU Legislations for Tuna Products; Yuichiro Harada, Federation of Japan Tuna Fisheries Cooperative Association, Japan-IUU Tuna Fishing and FOC Operations; Carmelo Agius - Tuna Culture in the Mediterranean and a speaker from EU to speak on Emerging Quality and Safety Considerations related to Tuna and Tuna Products in the EU. Other topics to be covered include HACCP and Safety Issues in Tuna Products - an Update (US speaker), Eco-labelling and Tuna Trade, Recent Developments in Tuna Culture (Australian speaker), New Developments in Tuna Processing, Quality Control in Tuna Handling and Processing, Transportation of Frozen Tuna, Latest Developments in Satellite Technology in Tuna Resource Location etc.

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# Raw material characteristics for extrusion of aqua diets

Galen Rokey

**A leading extrusion manufacturer discusses the raw material requirements for successful extrusion of aqua feeds.**

**R**aw ingredient formulation, selection of process equipment, and operating or processing conditions are independent regions of control that may be exercised in the extrusion cooking of feedstuffs.

Although the control regions are independent, they are interrelated to the point that discussion of one must include the others. In this article, ingredient selection and how ingredients react to various extrusions processing conditions are addressed.

Raw material utilisation and cost effective formulation are key operational factors. Raw material quality standards will certainly increase because of the demand of the aquaculturists for higher quality final products.

The ability to alter processing conditions and raw material formulations to keep formulation costs at a minimum, while maintaining high quality standards and minimum operating costs, is a challenge for every processor.

Ingredient selection has a tremendous impact on final product texture, uniformity, extrudability, nutritional quality, economic viability and the ability to accept high levels of fat when desired.

Within certain limits set by a nutritionist, the extrusion cooking process can control a wide range of product characteristics such as shape, density, buoyancy, hardness and absorption properties.

In general, during the extrusion cooking of cereal grain and protein blends, the moistened granular or floury materials are converted into a dough. The

starchy components gelatinise, resulting in a substantial uptake of moisture and an increase in dough viscosity.

Protein constituents may impact elasticity and gas-holding properties that are characteristic of hydrated and developed glutinous doughs. Other proteinaceous materials, those with low protein solubilities such as meat meal and fish meal, may contribute less to the adhesive and stretchable functional properties.

## Protein Sources

When formulating and processing aquatic feeds by extrusion cooking, it is important to understand that cereal grains alone cannot usually provide the required amino acid balance for proper growth or body maintenance for many species. Thus, proteinaceous ingredients are a major factor to ensure nutritional diets.

Proteinaceous ingredients are the most important constituent of most

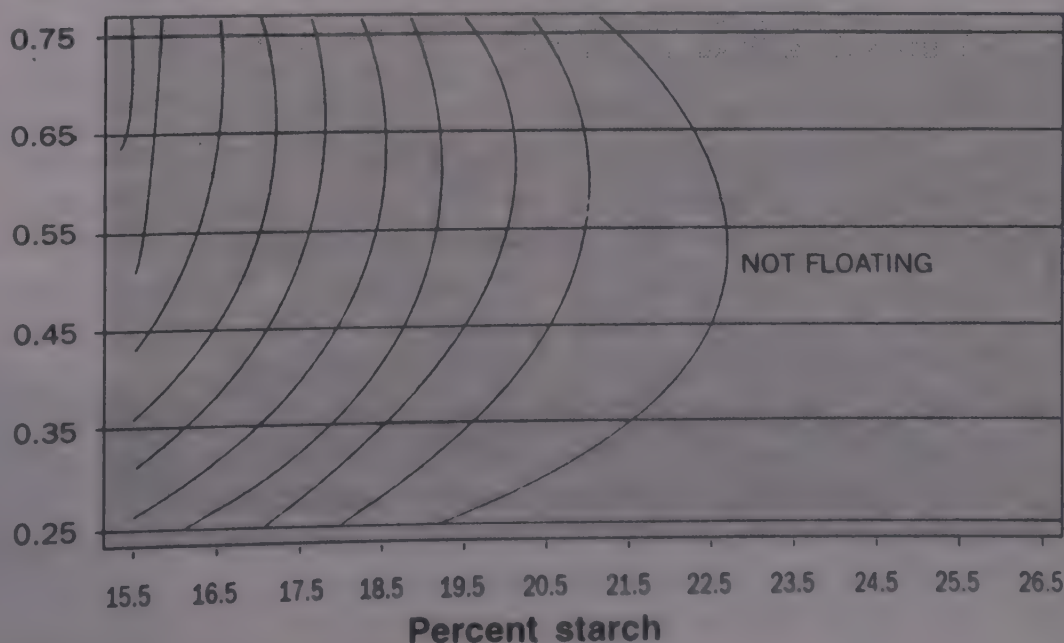
aquatic feeds, and usually comprise 20 to 70% or more of the formulation. Not only are proteins important nutritionally, but they possess functional characteristics such as water absorption, elasticity, and binding.

Ingredients containing protein can be divided into vegetable and animal sources. Vegetable protein sources include oil seeds such as soybeans, wheat gluten, and corn gluten meal. Vegetable proteins contribute greatly to both the structural and nutritional considerations in aquatic feeds.

Vegetable proteins generally have the following characteristics:

- High Nitrogen Solubility Index (NSI).
- Excellent water absorption and binding characteristics.
- Some limitations in amino acid profile.
- Low cost source of proteins.
- Full fat protein ingredients are also a good energy source.

## Effect of starch and die open area on floating fishfood







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- Wheat gluten is the largest contributor of "die swell" in this family.

Animal or marine proteins generally do not contribute structurally to extrusion cooked aquatic feeds, because they do not expand or combine with other ingredients in the same manner as do starch feedstuffs or vegetable proteins. That is primarily due to the high degree of thermal processing they have received in preparing them as suitable raw ingredients.

Innovations in raw material processing have yielded proteins with a high solubility index, making them useful as ingredients to impart specific, desired functional characteristics. Bloodmeal is now often spray dried instead of being processed in a ring dryer to preserve the protein solubility. Most common sources of animal protein are fishmeals, poultry by-product meal, meat and bone meal, bloodmeal and gelatin.

They have the following characteristics:

- Usually low NSI, water absorption and binding characteristics.
- Animal protein usually outperform plant proteins and show improved weight gains.
- Good amino acid profile.
- Protein quality is best when low

heat treatment is used during processing.

- Spray-dried and fresh sources contain good binding qualities.

There is an abundance of processing waste from livestock and fish processing plants and poultry and fish carcasses from grower operations. These wastes are becoming more difficult to dispose of and are currently limited by economics and local, state, and federal regulations. Approximately 1.25 tons of dead carcasses would be generated over a two month period from a typical flock of 25,000 broilers (assuming a 0.1% daily mortality).

One viable option for the utilisation of processing waste and the disposal of dead carcasses is to convert them into a slurry, mix with soybean meal and then extrude them to produce a useful complete feed. Several processing steps are eliminated by injecting the wet, raw waste directly into an extrusion system during the processing of a complete diet.

To utilise the raw, wet processing waste and by-products the following processing steps must be accomplished:

The raw wet by-products are initially processed through a meat grinder containing 3 mm openings in the die. The purpose of this step is to reduce the particle size to a more uniform distribution and to reduce bones and other harder particles to a smaller size. After grinding, the product may be heated in a steam jacketed kettle to approximately 60°C. This temperature serves three purposes.

First, a constant target product temperature is achieved to which all the wastes are heated so that any process temperature variations are eliminated. Second, any salmonella or other micro-organisms which may be growing in the product are eliminated. At the 60°C temperature, the proteins begin to denature so it is advisable not to exceed this temperature. A third possible reason for heating up to this

temperature is to partially render the fat and to reduce the viscosity or a raw waste making it easy to handle with pumps.

Generally these wastes contain 60-85% moisture and various levels of fat, protein and fibre. Viscosity reduction is also achieved through the action of natural enzymes found in the viscera.

### Starch sources

Starch is the primary carbohydrate form found in aquatic feeds. Starch levels vary from 5 to 60% in some carbohydrate shrimp feeds. Starches in aquatic feeds are not of great nutritional importance except as a binder and secondarily as an energy source. To function in this capacity, they must be well-cooked or gelatinised during the extrusion process.

When gelatinisation occurs during extrusion cooking, starch becomes soluble in either hot or cold water and will absorb large quantities of water. Starch is the primary ingredient in most formulations contributing to both expansion and binding (cohesion) in the final product. Typical starch contents found in the primary feedstuffs utilised for aquatic feeds are summarised in table 1.

Starch levels in the final product are dictated by nutritional requirements and bulk density desired in the final product. Increasing the starch content decreases bulk density in the extruded product.

The amount of starch required to achieve the desired expansion is also influenced by the level of water soluble or expandable protein in the formulation. The presence of these functional proteins enhances expansion and binding characteristics and lowers the level of starch required.

The principal processing contribution of starch is binding or cohesion in the finished product. A minimum of 10% starch in sinking aquatic feed and 20% starch in floating aquatic feed is recommended although these requirements are decreasing as process techniques improve.

There are other factors contributing to the floatability of aquatic feeds, that the

*Contd. on page 27*

**Table 1: Typical starch contents of common feedstuffs**

Feedstuff	% starch dry basis
Whole corn grain	70-75
Wheat flour	75-80
Wheat bran	5.8
Whole wheat grain	60-70
Hard red winter wheat, Red Dog	50-55
Flour, hard red winter wheat	80-85
Hard red winter wheat, shorts	18-22
Hard red winter wheat, bran	5-9
Whole sorghum grain	65-75
44% Soybean meal	0.0.5
Whole grain rice	75-85
Whole grain barley	55-65
Whole grain oats	40-50

Source: Wenger Manufacturing (2001)



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# Sustainability of Indian fisheries

Dr. Ramakrishnan Korakandy\*

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*Sustainable development is the management and conservation of the natural resource base, and the orientation of technological and institutional change*

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**F**ishing Industry is one of the major natural resource industry of the country. It produced an annual fish output of about 5.26 million tonnes in 1998-99 of which 2.7 million tonnes were marine and 2.56 million tonnes inland. Its contribution to the G.D.P. of the country at factor cost was Rs. 19,555/- crores at current prices during 1998-99. The quantity of marine products exported from the country during 2000-'01 was 4.40 lakh tonnes valued at Rs. 6443.89 crores. This industry, apart from providing cheap protein food to the population, provides employment to a large section of the population in coastal as well as interior regions. The employment provided by the industry in the processing, marketing and ancillary sectors are also significant. The sustained operation of this industry is vital for ensuring its contribution to the national economy, particularly to food supply, employment, earnings, foreign exchange earnings, regional development, public revenue, recreation, etc.

**Sustainable development as a goal**

"Sustainable development is the

management and conservation of the natural resource base, and the orientation of technological and institutional change in such a manner as to ensure the attainment and continued satisfaction of human needs for present and future generations. Such development conserves land, water, plant and genetic resources, is environmentally non-degrading, technologically appropriate, economically viable and socially acceptable" (FAO, 1991).

## **Fears about the sustainability of Indian fisheries**

Fears about the sustainability of Indian fisheries have been raised by many in the past.

### **Objective of this paper**

The objective of this paper is to focus on the major threats to sustainability identified in the present scenario of Indian fisheries and to examine the efficacy of some of the solutions offered by specialists and international organisations.

### **The methodology**

The methodology followed in this paper is to identify the major threats to sustainability posed in the current de-

bate and having manifestations in the industry and to examine the common solutions suggested by specialists and others and being implemented by fisheries management in India.

## **Major Threats to Sustainability**

Three major areas of threat to the sustainability of Indian fisheries may be pointed out. They are:

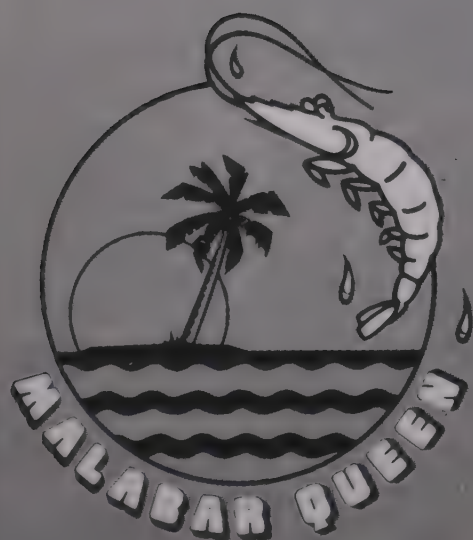
- a) Environmental or ecological
- b) Economic
- c) Social and cultural

### **Environmental (ecological) threats**

These primarily relate to the damage to the fisheries ecology or environment caused by human intervention in the form of biological over-fishing through destructive method of fishing like trawling, dynamitising, poisoning, etc. both in marine and inland waters. The overfishing problem was reported to be acute in the shrimp fisheries.

Another major ecological threat to fisheries in India is caused by water pollution, both in the coastal and inland environment. Fish killing by industrial and agricultural pollution is now endemic to Indian fisheries. The





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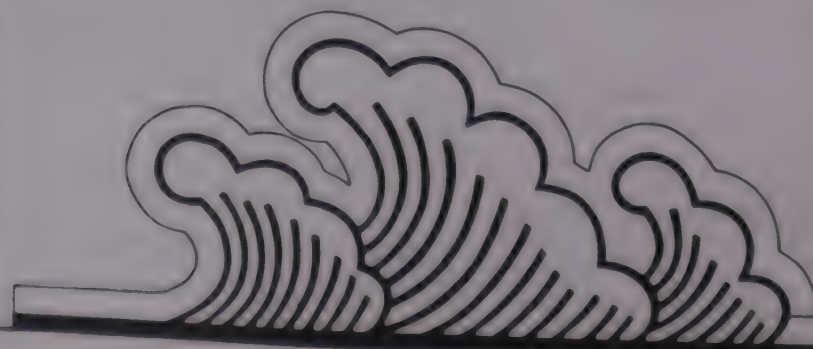
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damage to the fishery environment caused by river damming, soil erosion, siltation, land reclamation, etc. is also considerable.

Fish diseases causing mass mortality of fish is also now a major threat to the sustainability of Indian fisheries.

Of late, intensive aquaculture, leading to large scale modification of the natural environment, is also believed to cause serious threat to the sustainability of Indian fisheries. Loss of bio-diversity is also eating into the vitality of Indian Fisheries.

### Economic threat

The major economic threat to the sustainability of Indian fisheries is believed to be the problem of over-capitalisation or over-investment in the catching and processing branches of the industry. Over capitalisation in the industry was largely due to the lack of restriction on entry and the public policy of support by way of capital advances and subsidy to the industry in the past.

Excess capacity to the tune of 50 percent in the catching sector and 85 percent in the processing sector was reported. The over capitalisation problem (economic over fishing) was reported earlier. Over capitalisation in the industry is believed to have affected the private profitability of the industry and its survival.

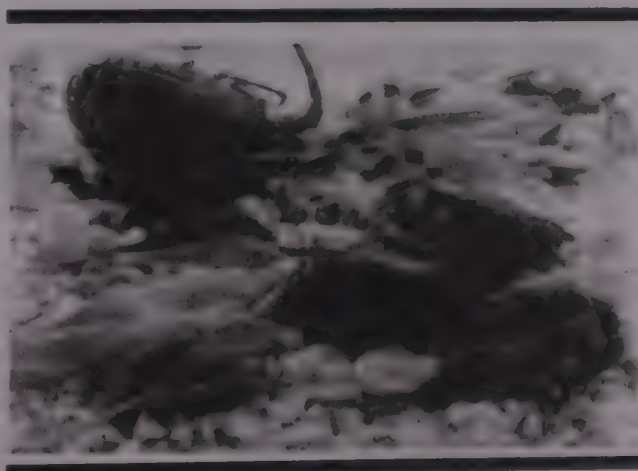
The over capitalisation problem is considered to be at the heart of the neo-classical theory of fisheries management which advocates limiting of fishing effort at the level where marginal revenue is equal to marginal cost. Limiting effort at this level is expected to bring back economic efficiency in the industry.

This neo-classical view of economic efficiency is, however, questioned by some economists. Geoffrey Waugh for instance, notes that "it is a principle that has great flexibility and can be adapted to include costs and benefits to commercial fishermen, recreational

fishermen, processors, consumers and other who may gain (or lose) from the existence of the fishery". Holding this broad view of economic efficiency, we may state that the fishing industry of India is producing considerable net benefits to society in the form of more food, employment, earnings, foreign exchange, regional development, etc. Once this view is accepted, a reduction in private profitability is not a major threat to sustainability, at least in the short-period. It may also be noted here that some 'inefficiency' or 'wastage' of capital is overlooked even in advanced countries, where market forces are said to lead to optimum allocation of resources. In developed countries, this is vouched for meeting the various social and economic objectives of fisheries management.

### Social and cultural threat

One major social threat to the survival of the industry is the growing intra-use and inter-use conflicts between fishermen and other users of the natural resource base. Intra-use con-



licts between traditional fishermen and mechanised boat operators are continuing even after the demarcation of fishing zones. This is inevitable especially when population pressure is exacerbating the economic crisis. Inter-use conflicts in the industry is also becoming common with the acquisition of water areas for power production, tourism and other projects.

Another emerging threat to the sustainability of fishing industry in India is the World Trade Organisation's move to introduce mandatory control on the employment of women and children in the processing sector of the fishing industry. Such controls are likely to affect the cost structure and the competitive power of the Indian seafood industry. It may also adversely affect the employment and the socio-economic condition of the people in the coastal belt.

### A critique of the prescriptions for sustainability

The standard prescriptions for imparting sustainability to Indian fisheries may be grouped into four categories.

They are:

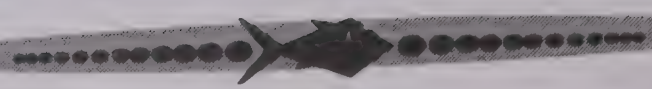
- a) Economic (market) solutions
- b) Institutional solutions
- c) Ecological solutions
- d) Technological solutions

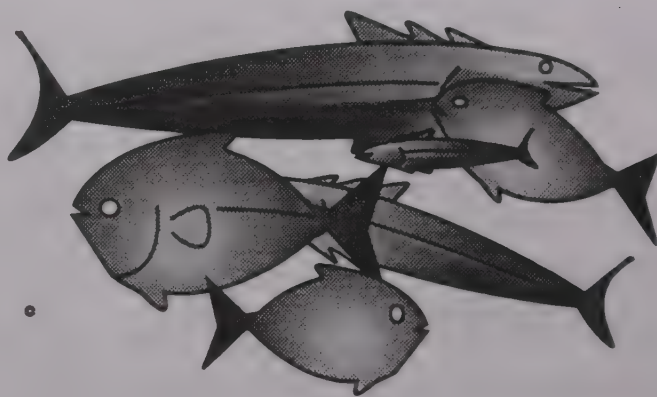
### Economic solutions

An economic solution for overcoming the over capitalisation problem as suggested by international organisations and finding acceptance by fisheries management in India, is 'disinvestment' by the public sector or Government. The major public sector participation in the fishing industry, outside infrastructure development in the past, was in the provision of capital inputs (loans) and subsidies to the catching, processing and marketing units. Removal of these facilities to the enterprises is believed to help in the weeding out of inefficient units and to make the operation of the industry optimum. (FAO, 1984). This is also expected to offer a 'level playing ground' to Indian and foreign enterprises, leading to optimum allocation of resources on a global scale.

One major pitfall with this 'disinvestment' proposal, however, is that it would instead of promoting efficiency,



  
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result in a fall in fish production and a rise in fish prices leading to less than optimum social benefits. Moreover, it will also cause unemployment among fishermen and other related workers leading to a state of depression in the industry.

Entry of big business on a global scale, which is also likely, can lead to monopoly power resulting in heavy rent extraction from the industry, leading to unwarranted and unequal flow of income and wealth from the country. The net result would be a fall in the net economic value (benefit) to society.

### **Institutional solutions**

One major institutional solution suggested for making the Indian fishing industry sustainable is the introduction of 'private property rights' over the natural resource base both in the marine and inland waters. Such a programme of privatisation is believed to promote proper allocation of resources and management of the natural resource by owners. It is said to produce maximum net benefit to the industry.

One anomaly, however, pointed out against this measure is that it instead of promoting sustained use of the resource, will lead to unbridled exploitation of the resource base and exploitation of the consumers by the business, all in the name of promoting economic efficiency. It will only aggravate the sustainability problem.

Another component of the institutional solutions suggested is the revival of 'indigenous community management systems' or 'self management' schemes in the management of small scale artisanal fisheries, which is considered to be a least cost, participatory and effective method of managing the fishery. Under such arrangements, granting of territorial use rights in fisheries (TURF) is advocated.

One disadvantage, however, with this arrangement is that the indigenous

systems which are sought to be resurrected have lost their existence value in the changed scenario of exploding population and depleted alternatives.

### **Ecological solutions**

Since a major threat to the sustainability of Indian fisheries is found in the deteriorating ecological basis of the industry, greater emphasis is placed on ecological solutions. Habitat protection is the most important component of this solution. In view of the multiple uses of the resource base, a stake-holder or participatory approach to management is also prescribed. Integrated coastal zone management involving large marine eco-systems (LME) or marine catchment basins (MCB) on a regional or national basis is also suggested.

### **Technological solutions**

Technological solutions are given a major priority in bringing about sustainability in Indian fisheries. The technological solutions sought, though a remote possibility, are expected to minimise the cost and damage to the industry. One frequently suggested solution is the adoption of low energy fishing techniques. Stock enhancement programmes involving artificial breeding, stocking, habitat development, etc. are also suggested. Developed country participation in these is considered possible.

It is, however, worth noting here that the technological solutions suggested, especially low-energy fishing, is found to have only limited acceptance by the fishermen. Most fishermen are now going for 'competitive' technological change.

Habitat development, species introduction, etc. are also bewildering questions in the changing scenario of growing pollution, bio-diversity loss and other environmental diminutions in India.

### **Options for the future**

In the prevailing circumstances, the

option for fisheries management in India is to continue with the 'precautionary approach', which has been following in the past. It would also be advisable for it to be doubly cautious of the consequences of attempting the economic (disinvestment) and institutional (privatisation) solutions prescribed by international organisations. This is particularly important in view of their impact on inter-generational and intra-generational equity (distributional justice), which are supposed to be the two main pillars of sustainability. Finally, it also demands on the part of the population to be more conserving and less consumptive of natural resources. But in all cases, as Caddy and Griffiths put it, "the achievement of sustainable development will involve a long struggle, with many hard lessons learned....".

*\*School of Industrial Fisheries, Cochin University of Science and Technology, Cochin - 682 016.*

*Contd. from page 21*

level of starch is critical.

Wheat and wheat by-products are the most common source of starch in aquatic feeds due to economics and availability. Other starch sources include corn, rice, tapioca, barley, potato and starch cereal grains, legumes and tubers.

The amylose fraction of starch has greater binding properties when contrasted to the amylopectin fraction. Tuber starches (potato, tapioca) and those starches high in amylose are the best choices for binders to improve cohesion of the final product.

Pre-cooked starches are sometimes utilised in formulations, although their higher costs are not offset by lower operating costs as was initially thought.

Cold-forming extrusion as a processing step does not insure the destruction of pathogenic organisms which is guaranteed in good extrusion cooking practices.

*Source: Asian Aquaculture*





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# FISH AND FISHERY PRODUCTS- European Quality Standards

A seminar on 'European Quality Standards for Fish and Fishery Products' was organized by the Embassy of France in India, European Business Information Centre in India, The Marine Products Export Development Authority, Cochin, The Cochin Chamber of Commerce and Industry and the Seafood Exporters Association of India- Kerala Region jointly with Export Inspection Council of India and K-BIP, Government of Kerala on Monday the 10<sup>th</sup> December, 2001 at hotel Taj Malabar, Willigdon Island, Kochi.

After the introductory speech of Mr Olivier Louis, Minister Counsellor, Economic Trade & Finance, Embassy of France, Mr Paul Menecier, Veterinary Officer, Head, International Sanitary Co- Ordination Unit Ministry of Agriculture, France and MS Gisele Rossat-Mignod, Head, Import Section, Ministry of Agriculture, & Fisheries, France spoke on "Special requirements of EU member states- France as a case study" and EU Quality control and testing systems" respectively. The former also spoke on "EU norms and the role of the EU Food AND Veterinary Office". Both the French Officials answered the vari-

ous questions raised by the exporters on the EU quality standards and its implementation.

The seminar was presided over by Mr A.J.Tharakan, Regional President



of SEAI, Kerala Region. Mr Elias Sait, President SEAI summed up the proceedings of the meeting.

Important points on the EU Quality Standards, Quality Control and Testing Systems and procedure gathered from the presentations Of the French officials are briefly given below:

## Rapid Alert

Contrary to the impression gained in India, only one type of "Rapid Alert" is issued by the EU.

Once the consignment fail in the test conducted at the Border Inspection Post, (i.e.: found that there is a health risk due to presence of pathogen/s and consequent rejection of con-

signment) a "Rapid Alert" is issued. Information on the rejection of the consignment is sent to all the member countries through European Commission. Consequently, the exporter is placed on the "Alert List" in all the member countries.

In the case of France, (if the rejected consignment is from India) the result of the tests is informed to the French importer, Indian Embassy in Paris (which in turn inform to the Indian Competent Authority) and to the European Commis-

sion (which in turn inform to all the member countries). Not all the other member countries follow the above procedure.

## Follow - up action after the issue of rapid alert

The exporter who is placed on the 'Alert List' will have to get 10 consecutive consignments passed in any of the EU port to come out of the 'Alert List.'. The consignment of the exporter will be checked in any of the entry port in one or more member countries in the EU. If for example, the rejection is at a particular port in Spain, then after ten consignments are passed spread over other EU ports, the exporter should



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collect the details of these passages and send them to Spanish Competent Authority for quick removal from the 'Alert List'. The exporter can also request the Spanish Authorities to inform the EC and the Competent Authorities of the other member countries of EU to take the exporter off the 'List'.

### Action taken by EU for non-compliance of import requirements

In case of detection of anti-biotic residues in the product, the consignment will be destroyed and it would not be sent back to the exporting country. Even if one sample is found to have harmful pathogen, the consignment will be rejected. In the case of detection of the pathogen *Vibrio spp*, the following procedure will be followed.

In case of absence of identification of the correct species of *Vibrio*, then also the consignment will be withdrawn and destroyed. In the case of detection of non-hazardous contaminants, the majority number of samples will be taken into consideration i.e. when 3

out of 5 samples are found positive, the consignment is rejected. In certain cases, where TPC is above the mini-

mum level but not beyond the maximum permissible level the consignment will be permitted entry, but the exporter is placed on the 'Alert List'.

EC etc). As against this, the various regions in Germany, Italy, Spain etc; have certain autonomy. The BIP in the regions may follow different testing procedure and also announce the re-

sults independently.

### No different standards for raw-frozen and cooked frozen shrimp

Unlike in USA, the European Union does not differentiate between raw and cooked shrimp in terms of quality requirements. The consignment – whether raw frozen

or cooked frozen-should be free of any pathogen. Otherwise it will be rejected.

### Appeal procedure

Each country has its own Appeal Procedure. It is better to go through the individual country's appeal procedure. And if unsuccessful go for final appeal to the European Commission. However, Appeal is entertained by EC more in the case of non-harmony of Standards or Testing Procedures followed and not in the case of detection of pathogens. These appeals will have a

### Information on test results

In France, it is the Central Authority in Paris, which guides the Border Inspection Posts (BIP) in adopting a uniform procedure for testing the consignments. Results of the tests are also

received by this Authority which in turn forward the same to concerned agencies (importer, Indian Embassy,

better consideration if they are made by the Country's Competent Authority.





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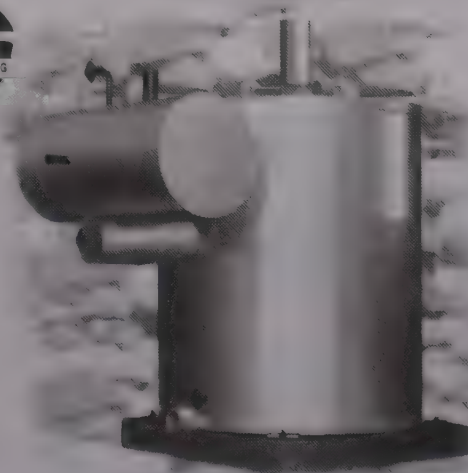
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# Levy of contribution from seafood exporters unconstitutional: Supreme Court

The Supreme Court declared the levy of contribution under Section 4(2) of the Kerala Fishermen Welfare Fund Act as unconstitutional. Section 4(2) of the Welfare Fund act had empowered the Welfare Fund Board to collect one percent of the sales proceeds of the dealers for meeting the welfare of the fishermen. Striking down this section as unconstitutional, the Constitutional Bench observed that in order to impose such levy for the benefit of the fishermen, the persons or the institutions from whom the impact is realised shall have the employer-employee relationship. The petition was filed by Koluthara Exports Kochi and the proceeding were commenced in the Apex Court in 1996. The Constitution Bench was headed by Chief Justice Shri.S P Barucha, with Justices Shri.Quadri, Shri.Variava, Shri.Banerji and Shri.Shivraj Patil.

## The Judgement:

REPORTABLE-55/2002

In the Supreme court of India

CIVIL APPELLATE JURISDICTION  
CIVIL APPEAL NO.12788 OF 1996

(From the Judgement and order dated 22.8.1996 of the Kerala High Court in O P NO.19806 of 1995)

Koluthara Exports Ltd

V

State of Kerala and Ors

...Appellant

... Respondents

THE FIRST DAY OF FEBRUARY, 2002

Present:

Hon'ble the Chief Justice  
Hon'ble Mr. Justice Syed Shah Mohammed Quadri  
Hon'ble Mr. Justice Umesh C Banerjee  
Hon'ble Mr. Justice S.N.Variava  
Hon'ble Mr. Justice Shivaraj V.Patil

V R Reddy and K M Bhat, Sr Advs. A K Jain, Rajesh Jain, Rajesh Kumar, C.V Francis, Ramesh Babu M.R, T G Narayanan Nair, K.R. Sasiprabhu, Adv. for G.Prahkash, Adv./Ad with them for the appearing parties.

## JUDGEMENT

The following judgement of the court was delivered



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## JUDGEMENT

Syed Shah Mohammed Quadri J

This appeal arises from the judgement and order of a Division Bench of the High Court of Kerala at Ernakulam upholding the constitutional validity of Section 4(2) read with Section 2(d) of the Kerala Fishermen's Welfare Fund Act 1985 (Act 30 1985) as amended by Act 15 of 1987) (for short the Act) in O P No. 19806 of 1995 and the batch by the common judgements dated August 22/23, 1996.

On September 25, 199 when this appeal came up for hearing before a Bench of two learned Judges of this Court, it was noticed that a Bench of three learned Judges of this Court in *Gasket Radiators Pvt Ltd v/s Employees State Insurance Corporation & Anr* (1985 (2) SCC 68) had taken the view that any contribution imposed by State Legislation under Entry 23 of the Concurrent List would not amount to either tax or fee which was relied upon by the respondent- State and that the appellant placed reliance on decisions of the Constitution Bench of this Court in the *Corporation of Calcutta & Anr vs. Liberty Cinema* (AIR 1965 SC 1107) and *M/s. Hoechst Pharmaceuticals Ltd. & Anr vs. State of Bihar & Ors* (AIR 1983 SC 1019). It was submitted that compulsory impost could be either by way of tax or fee and that the definition of taxation as found in Article 366 (28) of the Constitution of India and the said cases were not considered in *Gasket Radiators* (supra). The appeal was therefore referred to a Bench of three learned Judges. The bench of three learned Judges opined that in *Gasket Radiators* (supra) a concept of impost in the form of compulsory contribution

had been given birth and whether such birth should further multiply was a question, touching the interpretation of the Constitution and referred the appeal to a Constitution Bench of five Hon'ble Judges. That is how this appeal has come up before us.

Mr. A.K. Jain, the learned counsel appearing and appellate, contended that the appellant was a purchaser and exporter of fishes and there was no relationship of employer and employee between the appellant and the fishermen as such the Legislature cannot levy impost by way of contribution on it under Section 4(2) of the Act and that the impugned provision was bad for want of legislative competence.

Mr. K.N. Bhat the learned senior counsel appearing for the State of Kerala (respondent Nos. 1 and 2) has argued that the Act and the scheme framed thereunder are welfare legislation as postulated in article 39 and 41 of the Constitution for the benefit of the fishermen who are members of poor and downtrodden community. His further submission was that a legislation under Entry 23 of List III of the Seventh Schedule of the Constitution requiring one set of persons to pay contribution for the benefit of another set of persons, is valid and there need not be relationship of employer and employee between them. To sustain the validity of Section 4(2) of the Act he relied on the decision of this Court in *Mangalore Ganesh Beedi Works etc. etc. vs Union of India etc.* (1974) SCR 221 and *Gasket Radiators* (supra). He submitted that this Court in *Regional Executive Kerala Fishermen Welfare Fund Board vs Fanci Food & Anr* (1995) (4) SCC 341 had held that the appellant was a dealer and liable to pay contribution under the Act.

Mr. V.R. Reddy, the learned senior counsel appearing for the Welfare Fund Board (respondent No. 3) while adopting the argument of Mr. Bhat sought to justify the impost as fee but in as much as the learned Advocate General of the State of Kerala had taken a stand before the High Court that the impost was neither tax nor fee we did not permit him to urge that contention.

In view of the stand of the State that the impost under Section 4(2) of the Act is neither tax nor fee in it would not be necessary to consider the definition of taxation in Article 366(28) of the Constitution and the decision of this Court in *Corporation of Calcutta and M/s. Hoechst Pharmaceuticals Ltd* (supra).

The short but important question that arises is whether the impugned impost levied under section 4(2) read with Section 2(d) of the Act is unconstitutional for want of legislative competence of the state of Kerala.

To comprehend the nature and extend of impost it will be useful to refer to the relevant provisions of the Act.

Section 2 defines various terms employed in the Act. Section 3 speaks of Fishermen Welfare Fund scheme. Sub section (1) of Section 3 of the Act enables the Government to frame scheme to be called "Kerala Fishermen Welfare Fund scheme" (for short "the scheme") for the establishment of a fund under the Act by name "the Kerala Fishermen's Welfare Fund" (for short, "the fund") for the welfare of the Fishermen and directs that soon after the framing of the scheme the fund shall be established in accordance with the provisions of the Act and the Scheme. Various items of amounts, which form constituents of the fund and are required to be credited to the



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fund, are enumerated in sub section (2). Clause (A) of sub section (2) refers to contributions required to be made under section 4 of the Act. Sub section (3) directs that the fund shall be vested in and administered by the Board and sub section 4 enumerates the objects of the fund. They are as under:

### 3. Fishermen's Welfare Fund Scheme:

(1) to (3) \*\*\*      \*\*\*      \*\*\*

(4) The fund may be utilized for all or any of the following purposes namely: -

- a) To provide for distress relief to fishermen in times of natural calamities.
- b) For payment of financial assistance to fishermen who suffer permanent or temporary disablement
- c) For payment of loans or grants to fisherman to meet the expenses for the marriage of children or expenses in connection with diseases or death of dependants or any unexpected expenditure or the day to day expenditure during lean months.
- d) To provide for fisherman and the members of their families: -
  - i) education, vocational training and part time employment
  - ii) social education centers including reading rooms and libraries.
  - iii) sports, games and medical facilities
  - iv) nutritious food for children; and
  - v) employment opportunities for the handicrafts
- e) For payment of financial assistance to fishermen when suffer loss of houses or fishing implements or any other damage due to natural calamities or other unexpected causes.
- f) To provide old age assistance to fishermen

g) For implementation of any other purpose specified in the scheme.

Sub section (5) says that every fisherman who is a member of a fishermen's welfare society constituted under section 4 of the Kerala Fishermen Welfare Societies Act 1980 (7 of 1981) shall be a member of the fund and sub section (6) says that the scheme framed under sub section (1) may provide for all or any of the matters specified in sub section (4) and in the schedule.

Section 4 of the Act contains the list of contributors to the fund. Sub section (2) of the section 4, which is impugned, reads as under: -

"4. Contribution to the Fund: -

(1) - (1A) \*\*\*\*      \*\*\*\*      \*\*\*\*\*

(2) A dealer shall contribute to the fund every year 1% of the sales proceeds in the year"

Clause (d) of section 2 defines the term "dealer" in the following terms:

"2. Definitions: - In the act, unless the context otherwise requires

(a) to (c) \*\*\*\*      \*\*\*\*      \*\*\*\*

(d) "dealer" means any person who carries on, within the State of Kerala, the business of buying or selling or processing fish or exporting fish (in raw or processed form) or fish products and includes ( i ) a commission agent, a broker, or any mercantile agent, by whatever name called, and (ii) a non resident dealer or an agent of a non resident dealer or a local branch of a firm or company or Association situated outside the state of Kerala".

Section 12 prescribes the mode of determination of contribution and section 13 deals with provisional assessment and collection of advance contribution.

The appellant, a dealer under the Act, was served with a notice by the Board, under section 4(2) of the Act for

the period 1988-89 to 1994-95 calling up on it to show caused by contribution under section 4(2) of the Act should not be demanded from it. It is alleged that without considering the objections the order of the assessment was passed against it on November 30<sup>th</sup> 1995. This prompted the appellant to challenge the validity of the Assessment order and section 4 (2) of the Act. In the aforementioned writ petition in the High Court of Kerala at Ernakulam which was dismissed by the common judgement on August 22/23 1996. It is against that order that the appellant is in appeal before this Court.

Having regarded to the objects of the Act the High court opined that the Fishermen are the ultimate beneficiaries of this benevolent legislation. They fight against surging waves in the sea for catches of the fishes, which after changing hands reach the exporters for being exported to foreign countries. The fishermen are the backbone of the industry and without them the industry cannot exists and unless they are kept in good humor, the industry cannot nourish or flourish. Therefore there is very intimate nexus between the fishermen and an exporter of the marine products like the appellant. The learned judges of the High Court also opined that the employee-employer relationship was not wanting in the cases.

The statement of objects and reasons for the impugned act shows that the fishermen belong to one of the weakest sections of our society. The reasons for their poor socio- economic conditions are stated to be manifold. During off season and lean months as well as on special occasions like marriage, death, religious and social functions etc. in the families the poor fishermen are forced to borrow heavily from local money lenders or owners of craft on exorbitant rate of interest. They often fail to



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clear off the accumulated debts with the result they are permanently indebted to moneylenders had also forced to sell away the fruits of their hard labour of the prices dictated by the money lenders. Due to the risky nature of their occupation they are prone to accidents. They are subject to loss of houses and fishing implements due to the natural calamities. There is need for providing adequate educational facilities and occasional training and for providing old age assistance to them.

The Preamble to the Constitution records the resolve of the people of India to secure to all its citizens justice inter alia social, economic and political. Part IV of the constitution embodies the Directive Principles of State policy, which though not enforceable by any Court are fundamental in the governance of the country. Article 39 enjoins that it shall be the duty of the State to apply these principles in making laws. Clause (b) (c) and (e) respectively of the article 39 lay down that the State shall in particular direct its policy towards securing that the ownership and control of material resources of the community are so distributed as best to sub-serve the common good; that the operation of economic system does not result in concentration of wealth and means of production to the common detriment and that the health and the strength of the workers, men and women and the tender age of the children are not abused and that the citizens are not forced by economic necessities to enter avocation unsuited to their age or strength. Article 41 directs that the state shall with the limits of its economic capacity and development (emphasis supplied) making effective provision for securing right to work to education and to public assistance in case of unemployment, old age sickness and disablement and in other

cases undeserved want.

Keeping these constitutional objectives and the statement of objects and reasons in mind it cannot but be said that the Act and the establishment of welfare fund thereunder for requirements of fishermen outlined in sub-section (4) of Section 3 of the Act is a commendable legislation. It will be apt to refer to the observations of Alagiriswami J. in his concurring opinion in Mangalore Ganesh Beedi Works (supra):

**“‘Nobody can dispute the need for setting right those evils. But good intentions should not result in a legislation which would become ineffective and lead to a lot of fruitless litigation over the years’”.**

Now adverting to the constitutional validity of the impugned provisions, it must be remembered that Part IV of the Constitution contains, as noticed above fundamental principles in governance of the county. They indicate and determine the direction for the State but they are not legislative heads or the fields of legislation like the Entries in the List I, II and III of the Seventh Schedule of the Constitution. When any statute of a state or any provision therein is questioned on the found of lack of legislative competence, the state cannot claim legitimacy for enacting the impugned provisions with reference to the provisions in Part IV of the constitution: the legislative competence must be demonstrated with reference to one or more of the Entries in List II and III of the Seventh Schedule of the Constitution. It is stated that the legislative competence is referable to Entry 23 of the Concurrent List, which may be extracted here:

**“List III-Concurrent List-**

**23. Social security and social insurance: employment and unemployment”**

There can be no doubt that Entry 23 enables the state Legislature to enact a law in respect of social security and social insurance or dealing with employment and unemployment. The provisions of sub-section (4) of section 3 of the Act (quoted above) postulate social security and welfare measures for the fishermen. The State can therefore justify its competence under this Entry. But, in our view, the State cannot in an Act under Entry 23 of List III place the burden of an impost by way of contribution for giving effect to the Act and the scheme made thereunder for the social security and social welfare of a section of society upon a person who is not a member of such section of society nor an employer of a person who is a member of such section of society. The burden of the impost may be placed only when there exists the relationship of employer and employee between the contributor and the beneficiary of the provisions of the Act and the scheme made thereunder.

The validity of Employees' State Insurance Act, 1948 in regard to special contribution of the employer under Chapter V-A of the said Act, was brought under challenge in appeal before a three-judge Bench of this Court in Gasket Radiators (supra). The Court held that the payment of contribution by an employer towards the premium of an employee's compulsory insurance under the Employees State Insurance Act fall directly under Entries 23 and 24 of List III. It was also held that the contribution under the Act or contribution to provident fund or payment of other benefits to workers are neither taxes nor fees and that they fall within the ambit of Entries 23 and 24 of List III. We are in agreement with the observation of Chinnappa Reddy, J, who speaking for the Court observed:



"In our understanding, Entries 23 and 24 of List III of the their own force, empower Parliament or the Legislature of a state to direct the payment by an employer of contribution of the nature of those contemplated by the Employees' State Insurance Act for the benefit of the employees."

In Mangalore Ganesh Beedi Workers (supra) the constitutional validity of Sections 3, 4, 2(g)(h), 2(m) 26, 27 and 31 of the Beedi and Cigar Workers (condition of Employment) Act 1966 was assailed on the ground of lack of legislative competence in the Parliament to enact such a law having noticed the special feature of the industry of manufacturer of beedi through various categories of workers. The said act was passed by the Parliament to provide for the welfare of workers in the beedi and cigar establishments and to regulate the condition of their work and for matters connected therewith. A Constitution Bench of this Court held that having regard to the true nature and character of the legislation meant for enforcing better conditions of labour amongst those who are engaged in the manufacture of beedis and cigars. The said Act in pith and substance was for the welfare of the labour falling within Entries 22, 23 and 24 of List III. It was pointed out that the said Act had fastened liability on the person who himself engaged labour or the person for whom or on whose behalf labour was engaged or the person who had ultimate control over the affairs of the establishment by reasons of advancement of money or of substantial interest in the control of affairs of the establishment. Thus it is clear that in that case the impugned legislation while creating welfare scheme for beedi workers levied impost by way of contributions on the employer or a person in the

position of an employer.

The Regional Executive, Kerala Fishermen's Welfare Fund Board (supra) the question before this Court was whether exporters of fish meat carrying on business of buying processed fish and exporting the same fell within the meaning of dealer under Section 4(2) of the Act. The legislative competence of the State legislature and the constitutional validity of the Section 4(2) of the Act did not arise for the consideration of the court in that case. That case therefore does not advance the case of the respondents.

In the instant case, the only nexus between the categories of persons covered by the sweep of sub section (d) of Section 2 of the Act, including the appellant, who carry on the business of buying or selling or processing fish or exporting fish (in raw or processed form) or fish products including –(i) a commission agent or a broker or any other mercantile agent by whatever name called and (ii) a non resident dealer or an agent or a non resident dealer or a local branch of a firm or company or association situated outside the State of Kerala and the beneficiaries under the act and the Scheme – the fishermen- is that the former are the purchasers and the latter are the catchers and sellers of fish. Such a nexus in our view is not sufficient to burden a purchaser/exporter with the impost of levy of contribution and of section 4 (2) of the Act which will clearly be outside the ambit of Entry 23 of list III of the Constitution and therefore lacking legislative competence.

For these reasons Section 4(2) of the Act is declared to be unconstitutional. Consequently, the order under challenge is set aside. The writ petition shall stand allowed to that extent.

Mr. V R Reddy submitted that the

amounts credited to the welfare fund by dealers under Section 4(2) of the Act had been expended by the Board for purposes of the Act and the scheme so this Court might be pleased to relieve the Board of the obligation to refund the amounts to the dealers-contributors. On hearing Mr. Jain and on careful consideration of the submission of Mr. Reddy, we direct that pursuant to the declaration of invalidity of Section 4(2) of the Act, the amount of contributions, already paid by persons falling under Section 4(2) will not be liable to be refunded to the dealers – contributors by the board.

The appeal is allowed accordingly. In the circumstances of the case, we make no order as to costs.

Syed Shah Mohammed Quadri

U.C Banerjee

S.N. Variava

Shivaraj V. Patil

New Delhi

February 1, 2002

### ECUADOR TO TEST ALL EXPORT CONSIGNMENTS OF SHRIMP FOR

#### CHLORAMPHENICOL RESIDUES

Ecuador National Institute of Fisheries (NIF) has announced that it would test of all shrimp exported from Ecuador to verify whether the shrimp is free from prohibited antibiotic –Chloramphenicol-. As per its new rule, which came into effect from January 24<sup>th</sup>, 2002, officials of NIF, after testing the consignments, will issue a certificate that the shrimp was inspected and found to contain no traces of the banned antibiotics. It has further clarified that no export will be allowed from Ecuador without a certificate issued for the banned antibiotics.



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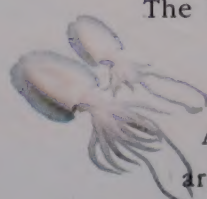
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